

Appl. No. 10/707,997  
Response to Office Action dated December 15, 2005

# AMENDMENTS TO THE SPECIFICATION

Please amend paragraph 0074 of the specification to read as follows.

[0074] ATB:n-HEPTANE, ATB:TOLUENE, VTB:TOLUENE Tc/Pc CURVES: Figs. 8-10 ~~[[9-11]]~~ show Tc/Pc curves for ATB/n-heptane, ATB/toluene, and VTB/toluene mixtures, respectively. Because the high-boiling hydrocarbons have a relatively high critical temperature, the use of large solvating hydrocarbon dilution rates may be necessary to reduce the critical temperature of the mixture into the desired range. Figs. 8-10 ~~[[9-11]]~~ demonstrate the influences of proportion of solvent or solvating hydrocarbon used on the critical pressure (Pc) and temperature (Tc) of various feed mixtures. The critical pressures and temperatures were estimated using the Soave-Redlick-Kwong equation of state, with error ranges expected to be on the order of +/- 8.3°C (15°F and +/- 0.34 MPa (50 psi). For the ATB-heptane system in Fig. 9, for example, the Tc and Pc for ATB are 731°C (1348°F) and 2.5 MPaa (361 psia) respectively, and for n-heptane the Tc and Pc are 267°C (513°F) and 2.7 MPaa (397 psia). A 33 wt% n-heptane/67 wt% ATB mixture has a supercritical temperature of 596°C (1106°F). At a 50-50 ratio, the Tc is lowered to 504°C (940°F). The desired temperature range to run the supercritical conversion is between 427°and 482°C (800°and 900°F), calling for the n-heptane concentration to be greater than 50 percent, desirably

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greater than 55%. Note also that the critical pressure for this mixture is greater than either the solvating hydrocarbons or ATB alone, as is typical for a mixed hydrocarbon system. However, when an 80 wt% n-heptane/20 wt% ATB mixture is used, the  $T_c$  is about 332°C (629°F) and  $P_c$  is about 5.3 MPaa (765 psia) for the feed mixture. Similar observations are evident from Fig. 10 for the ATB-toluene system.